

REMARKS

Claims 1-6 are pending and under consideration in the above-identified application.

In the Final Office Action dated April 3, 2008, the Examiner rejected claims 1-6.

With this Amendment, claims 1 and 4 were amended. The amendments were made to make the claims easier to read and in better conformance with United States practice. No new matter has been introduced as a result of the amendments. Indeed, the substantive limitations have merely been reordered.

I. 35 U.S.C. § 103 Obviousness Rejection of Claims

Claims 1-3 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Gill (U.S. Patent No. 6,181,537). Applicant respectfully traverses this rejection.

Claim 1 requires a fixed magnetization layer made of a crystalline ferromagnetic material located directly below and in contact with said intermediate layer. Claim 1 also requires a free magnetization layer made of an amorphous ferromagnetic material located adjacently above said intermediate layer. As discussed in the Specification, the structure required by claim 1 allows the magnetization direction of the ferromagnetic material of the magnetization free layer to be inverted stably, which, improves the rectangle properties of the resistance magnetic field curve, decreases the Barkhausen noise and decreases the coercivity. Specification, Pages 9, 21-22.

Additionally, the claimed invention requires that the magnetoresistive device has a tunnel magnetic resistive (TMR) ratio greater than 45%, a coercivity value less than 6% and a rectangle ratio greater than 90%. Claim 1 has been amended to positively recite these ratios and values as measurable characteristics of the device. As such, they are not merely goals, but further distinguish the claimed device from the prior art.

Furthermore, Gill does not teach or even fairly suggest a fixed magnetization layer made of a crystalline ferromagnetic material that is located directly below and in contact with the intermediate layer as required by claim 1. In fact, the fixed crystalline magnetization layer (215) in Gill is located directly below the amorphous fixed layer (220).

Additionally, Gill does not teach or even fairly suggest a magnetoresistive device with a tunnel magnetic resistive (TMR) ratio greater than 45%, a coercivity value less than 6% and a rectangle ratio greater than 90%. The Examiner has not pointed to any such teaching or suggestion, and no such teaching or suggestion is apparent.

As such, the cited reference fails to teach or suggest all the required elements of claim 1. Thus, claim 1 is patentable over Gill as are dependent claims 2-3 for at least the same reasons. Accordingly, Applicants respectfully request that the above rejection be withdrawn.

Claims 4-6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Miyatek, et al. (U.S. Patent No. 6,842,361) in view of Gill (U.S. Patent No. 6,181,537). Applicant respectfully traverses this rejection.

Miyatek et al. teaches a memory cell with a magnetization fixed layer made of ferromagnetic material provided under an intermediate layer and a magnetization free layer made of ferromagnetic material provided above the intermediate layer. Miyatek et al., Col. 3, lines 54-60. Miyatek et al., does not teach or even fairly suggest a fixed magnetization layer made of a crystalline ferromagnetic material that is located directly below and in contact with the intermediate layer as required by claim 4. Furthermore, Miyatek et al. does not teach or even fairly suggest a free magnetization layer made of an amorphous ferromagnetic material located adjacently above the intermediate layer.

As discussed above, Gill does not teach or even fairly suggest the structure required by claim 4. As such, taken singularly or in combination with each other the cited references fail to either teach or suggest all of the required elements of independent claim 4. Thus, claim 4 is patentable over the cited references, as are dependent claims 5-6 for at least the same reasons. Accordingly, Applicant respectfully requests that the above rejection be withdrawn.

II. Conclusion

In view of the above amendments and remarks, Applicant submits that all claims are clearly allowable over the cited prior art, and respectfully requests early and favorable notification to that effect.

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